



### Oak Wilt disease (*Ceratocystis fagacearum*)

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**Hosts:** Oak (*Quercus* spp.). Symptoms are more severe on species in the red oak group (oaks with pointed leaf tips). The disease can persist on white oak group oaks (rounded leaf tips) causing less-severe symptoms for several years.

**General information:** Oak wilt has not been detected in Maine but is a pathogen of significant concern and therefore a focus of early detection efforts. The causal agent of oak wilt, *Ceratocystis fagacearum*, has been confirmed in three locations on Long Island, New York, one location in eastern and one location in western New York State. This disease has caused mortality of oaks in the Midwestern United States for decades and is a threat to oaks in natural and residential areas.

**Symptoms and Signs:** The oak wilt fungus kills water conducting tissues (xylem) leading to wilting and killing of branches (flagging). As the disease progresses in the tree, wilting and branch mortality expands with trees dying in the same year or the following year (depending on the specific situation). Oak trees have a habit of connecting their roots with neighboring oak trees (root grafting). This can allow the oak wilt fungus to spread from tree to tree rapidly, causing pockets of oak mortality in a stand. Trees infected with the oak wilt fungus via root grafts die all at once, the same year they are infected. The disease persists for long periods of time in white oak group oak trees causing noticeable, but less-severe symptoms and overall slower decline.



Figure 1: (left) Early leaf symptoms of oak wilt disease on pin oak. Photo: Paul A Mistretta USFS, Bugwood. (right) An oak branch showing wilting symptoms, in this case associated with the oak wilt disease. Photo: Ronald F. Billings, Bugwood.

**Management:** Wounding of oak trees via pruning or otherwise during the growing season should be strictly avoided in areas where the oak wilt pathogen is present. This is because the sap feeding insects that spread the disease are attracted to both the fungal structures producing sweet, spore-filled liquid (fungal pads, Figure 2, right) and tree wounds. If the beetle visits a fungal structure and becomes coated with spores as it feeds and then visits a wound site on an oak tree, the fungus will likely be successfully transmitted. If wounds occur in summer, they should be sealed or dressed in a way to prevent beetles from making contact with the wound. The oak wilt fungus has also been shown to be vectored by twig beetles. Underground root grafting junctions must be broken around infected trees to avoid spreading the disease to neighboring trees. This is accomplished by trenching around infected removed trees or efficient stump and root removal. Trees that die in the summer must be removed from the site and dried by debarking, splitting, chipping or burning the wood. This prevents the possible formation on cut trees of the spore-producing fungal pads that are effective in disease transmission.



Figure 2: (left) An oak tree in late stages of decline, with wilt symptoms involving most of the crown. (right) Outer bark removal reveals a fungal pad that produces the sticky, spore-filled liquid involved in attracting beetles that will vector the oak wilt fungus to other oak trees.

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